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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,882

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EXAMINER

DESAI, ANISH P

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/724,882	Applicant(s) UETANI ET AL.	
	Examiner ANISH DESAI	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's arguments in response to the Office action dated 01/06/09 have been fully considered. It is noted that applicant has amended claim 1 to incorporate the subject matter of claim 13.
2. The 35 USC Section 112-second paragraph rejections are withdrawn in view of applicant's amendment and response.
3. The 35 USC Section 102(b) rejections based on Kinzer et al. (US 5,667,893) are withdrawn in view of applicant's amendment and response. Kinzer does not teach or suggest "a crosslinking polymer layer...**consisting** of a crosslinking polymer" as presently claimed.
4. The 35 USC Section 103(a) rejections based on Yuji et al. (JP 2002-110245-machine translation previously provided by the Examiner) in view of Nakagawa et al. (WO01/75991) are maintained. US 2003/0064282A1 to Nakagawa et al. is relied upon as an equivalent document for convenience.

International Search Report (ISR)

5. Applicant has provided the international search report citing WO 00/03449A (US 6,822,065 A to Sanchez et al. is equivalent) as "X" reference. The Examiner has reviewed aforementioned reference but not agreed with the citation of the ISR because the aforementioned document does not teach or suggest "a **crosslinking polymer** layer formed on the porous film substrate so as to be in contact with....**consisting** of a crosslinking...cation" as presently claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuji et al. (JP 2002-110245-machine translation previously provided by the Examiner) in view of Nakagawa et al. (WO01/75991). US 2003/0064282A1 to Nakagawa et al. is relied upon as an equivalent document for convenience.

7. Regarding claims 1 and 13, Yuji discloses a lithium ion secondary battery, which uses a solid polymer electrolyte (abstract, page 6) and a liquid crosslinkable composition for the solid electrolyte (0001). The liquid crosslinkable composition for the solid electrolytes of Yuji et al. comprises radically polymerizable monomers of oxetane ring containing monomer and epoxy group containing monomer (0011). Moreover Yuji teaches a battery separator (0004). Additionally, Yuji teaches that the liquid crosslinkable composition containing oxetane group and epoxy group is injected into the airtight container, which has units such as electrodes and separator (0020). The liquid composition infiltrates into gaps such as electrode and a separator (0020).

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8. With respect to claim 1, it is noted that the reference of Yuji discloses same crosslinking polymer containing cation-polymerizable functional group selected from the group consisting of 3-oetanyl group and epoxy as claimed by applicant. The difference between the invention of Yuji and the presently claimed invention is that Yuji does not explicitly teach “a crosslinking polymer layer formed on the porous film substrate so as to be in contact with the porous film substrate **consisting** of a crosslinking polymer layer...cation.” as claimed. Specifically, Yuji does not teach coating of the aforementioned crosslinking polymer onto a porous film substrate. Instead, Yuji discloses injecting aforementioned crosslinking polymer along with cationic initiator, electrolyte solvent and lithium electrolyte salt into the airtight container (i.e. battery), which has units such as electrodes and battery separator (see claim 19).

9. However, Nakagawa teaches that as a method for inhibiting liquid electrolyte leakage there is known a method, which comprises incorporating a crosslinkable monomer in a liquid electrolyte, subjecting the liquid electrolyte to crosslinking reaction to produce a jelly solidified gel electrolyte, and then using the solid electrolyte comprising a solidified liquid electrolyte singly or in combination with a substrate as a separator (0004). According to Nakagawa such method has disadvantage because in the case of such a gel electrolyte, ions move through the gel at a very low rate than in the liquid electrolyte, easily causing an increase of internal resistivity of battery and drop of high rate discharge capacity. The resulting battery shows insufficient battery properties (0005). To overcome these disadvantages Nakagawa teaches a separator

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for battery prepared by impregnating or coating a porous material (porous film/membrane) with a monomer solution comprising crosslinkable monomer (0071).

10. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film of Nakagawa as a battery separator in the invention of Yuji and form a crosslinking polymer layer of Yuji on the porous film as taught by Nakagawa, motivated by the desire to avoid increase of internal resistivity of a battery and drop of high rate discharge capacity.

11. Regarding claim 2, the oxetane ring containing monomer of Yuji contains 3-oxetanyl group (0013).

12. With respect to claim 3, the liquid crosslinkable composition contains the other radically polymerizable monomer (claim 2). Further, Yuji teaches the claimed formula III on pages 27 and 28, which reads on the methacrylate monomer as represented by formula III as claimed.

13. Regarding claim 4, Yuji teaches that the quantity of the radically polymerizable monomer with oxetane ring and another radically polymerizable monomer is 5 to 50% by weight (claims 2 and 3).

14. With respect to claim 5, Yuji discloses that the quantity of the radically polymerizable monomer having epoxy group and the other radically polymerizable monomer is 5 to 50% by weight (claims 4 and 5).

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15. Regarding claims 6 and 7, Yuji discloses the claimed 3-oxetanyl group containing (meth) acrylate formula (I) on page 25 and claimed epoxy group containing (meth) acrylate formula (II) on pages 26 and 27 respectively.

16. Regarding claim 9, Yuji is silent as to teaching of porous film substrate having a thickness of 3 to 50 μm and a porosity of 30 to 95%. However, the invention of Nakagawa is previously disclosed. Nakagawa discloses that the thickness of the porous material (porous film/membrane) is not greater than 30 μm (0069) and the porous material has porosity of 50% (0106). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film substrate of Nakagawa with the thickness and porosity as taught by Nakagawa as a battery separator in the invention of Yuji, motivated by the desire to provide a suitable battery separator.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1-7 and 9-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim claims 1-9 and 13-17 and claims 1-17 of copending Application No. 11/267,404 and 10/569,417 respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-7 and 9-12 of the presently claimed invention encompass the same subject matter as claimed by claims 1-9 and 13-17 and claims 1-17 of the aforementioned copending applications respectively.

18. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. Claims 1-7 and 9-12 are directed to an invention not patentably distinct from claims 1-9 and 13-17 and claims 1-17 of commonly assigned Application No. 11/267,404 and 10/569,417 respectively. Specifically, although the conflicting claims are not identical, they are not patentably distinct for the reasons set forth in paragraph 17 above.

20. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned application(s) 11/267,404 and 10/569,417,

discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

21. A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Response to Arguments

22. Applicant's arguments received on 03/30/09 are fully considered, but they are not found persuasive.

23. Regarding the art rejection based on Yuji (JP 2002-110245) (hereinafter "JP'245") in view of Nakagawa et al. (WO01/75991), on page 7 of applicant's amendment, applicant argues "Claim 1 is directed to a porous film prior to being used in a battery (that is no electrolyte is present). Thus, the claimed porous film is a layer of crosslinking polymer. In contrast JP'245 discloses a liquid composition comprising the oxetane ring polymer, ethylene carbonate/diethyl carbonate...The "consisting of"

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language excludes the additional components and thus, distinguishes claim 1 from JP'245."

24. The Examiner recognizes that applicant is intending to exclude other components from the crosslinking polymer layer by addition of "consisting of" in the claim language. However, it is noted that the reference of Yuji discloses same crosslinking polymer containing cation-polymerizable functional group selected from the group consisting of 3-oetanyl group and epoxy as claimed by applicant. The difference between the invention of Yuji and the presently claimed invention is that Yuji does not explicitly teach "a crosslinking polymer layer formed on the porous film substrate so as to be in contact with the porous film substrate **consisting** of a crosslinking polymer layer...cation." as claimed. Specifically, Yuji does not teach coating of the aforementioned crosslinking polymer onto a porous film substrate. Instead, Yuji discloses injecting aforementioned crosslinking polymer along with cationic initiator, electrolyte solvent and lithium electrolyte salt into the airtight container (i.e. battery), which has units such as electrodes and battery separator (see claim 19).

25. However, Nakagawa teaches that as a method for inhibiting liquid electrolyte leakage there is known a method, which comprises incorporating a crosslinkable monomer in a liquid electrolyte, subjecting the liquid electrolyte to crosslinking reaction to produce a jelly solidified gel electrolyte, and then using the solid electrolyte comprising a solidified liquid electrolyte singly or in combination with a substrate as a separator (0004). According to Nakagawa such method has disadvantage because in

the case of such a gel electrolyte, ions move through the gel at a very low rate than in the liquid electrolyte, easily causing an increase of internal resistivity of battery and drop of high rate discharge capacity. The resulting battery shows insufficient battery properties (0005). To overcome these disadvantages Nakagawa teaches a separator for battery prepared by impregnating or coating a porous material (porous film/membrane) with a monomer solution comprising crosslinkable monomer (0071).

26. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film of Nakagawa as a battery separator in the invention of Yuji and form a crosslinking polymer layer of Yuji on the porous film as taught by Nakagawa, motivated by the desire to avoid increase of internal resistivity of a battery and drop of high rate discharge capacity.

27. On page 7 of applicant's amendment, applicant further argues "In addition, Nakagawa discloses a crosslinked polymer layer on the porous support. The Examiner asserts that it would be obvious to form a polymer layer on the porous film as taught by Nakagawa because Nakagawa teaches that the process of JP'245 results in insufficient battery properties. However, since Nakagawa teaches the use of a "crosslinked" layer, if JP'245 were modified to use the method of Nakagawa, the result would be a "crosslinked" layer as opposed to a "crosslinking" layer, which is claimed."

28. The Examiner respectfully disagrees. While Nakagawa intends to form a "crosslinked" polymer layer, Nakagawa also discloses formation of "crosslinking" layer. This is evidenced from paragraph 0071 of Nakagawa, where Nakagawa discloses of

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coating the porous film with a monomer solution, and then crosslinking the monomer to form a crosslinked layer. Thus, given that before the polymer is crosslinked it is clearly a crosslinking polymer as presently claimed. Accordingly, applicant's arguments are not found persuasive.

29. With respect to applicant's request that the double-patenting rejections of the record be held in abeyance, it is noted that the double patenting rejections will be maintained until such time as they are properly overcome (MPEP 804 IB and IB1).

Conclusion

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

31. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANISH DESAI whose telephone number is (571)272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

33. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. D./

Examiner, Art Unit 1794

/Callie E. Shosho/

Supervisory Patent Examiner, Art Unit 1794